

REMARKS

Claims 1, 3, 4, 6-14, and 16-24 remain in this application. Claims 17-22 and 24 have been allowed, Claims 1, 4, and 9 have been amended, and Claims 2, 5, and 15 have been canceled. The Applicant respectfully requests reconsideration and review of all claims pending in this application.

In the Office Action mailed on October 22, 2002, the Examiner rejected Claims 1-24 under 35 U.S.C. § 251, asserting that the reissue oath filed on September 18, 2002 was defective. Nevertheless, the Applicant submits that the September 18, 2002 reissue oath complies with the requirements set forth in the Patent Rules, and, in a conversation with the Examiner on January 8, 2003, the Examiner agreed that the reissue oath filed on September 18, 2002 complies with the requirements set forth in the Patent Rules. As a result, the Applicant requests that the Examiner remove this basis for rejection.

The Examiner stated that, under 37 C.F.R. § 1.178, the original patent or a statement as to loss or inaccessibility of the original patent must be received before this reissue application can be allowed. After all other rejections are removed in this application, the Applicant will take all necessary steps to comply with 37 C.F.R. § 1.178, if any additional steps are necessary.

Applicant acknowledges with appreciation the allowance of Claims 17-22 and 24. It is respectfully submitted that Claims 1, 3, 4, 6-14, 16, and 23 are also allowable, as explained below.

Before addressing the merits of the rejections, the Applicant provides a brief summary of the invention. The present invention is directed to a shield (or heat sink) for use with a hard disk drive containing a heat emitting motor and electrical components. Heat from the motor must be dissipated to prevent the disk drive from over heating. And, because hard disk drives are often installed and removed from computers while the computers are energized, the electrical components are very hot during installation and removal of the hard drives. Therefore, during installation and removal of the hard

drives, users are at risk of being injured by contacting the hot electrical components, which are exposed to the environment. To prevent overheating, the present invention provides a shield that is attached to the hard disk drive and used to dissipate heat from the hard disk drive (or more particularly the heat emitting motor within the disk drive) to the atmosphere. In particular, the shield is formed from a thermally conductive material and is comprised of a plate that includes a substantially planar surface. A depression is formed and located within the substantially planar surface so that the plate will be in contact with the motor when the plate is attached to the hard disk drive. The depression dissipates heat from the motor. A plurality of louvered fins that are adapted to dissipate heat from the plate to the environment are also formed on the substantially planar surface. To prevent users from contacting the hot electrical components during installation and removal of a hard drive, the plate is substantially planar so that it can physically cover at least a portion of an open end of the hard drive. By physically covering a portion of the open end of the hard drive, the plate prevents users from coming into contact with the hot electrical components within the hard drive when the users are installing and removing the hard drives from energized computers.

The Examiner rejected Claims 1-16 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Skutt (U.S. Patent No. 5,734,149) and Wilens (U.S. Patent No. 4,605,058). This rejection is respectfully traversed.

Skutt pertains generally to a kiln assembly that includes an electric heater and a hinged control box that houses control components for controlling the heat (i.e., temperature and duration) provided by the electric heater. The Skutt kiln assembly is designed to keep the control components cool by insulating the control components from the kiln, which produces heat, and by increasing the cooling effect of air within the control box, which houses the control components. To insulate the control components from the kiln, Skutt only allows minimal physical connection between the control components and the kiln. As shown in Figures 6 and 7, the only direct physical connection between the control box and the heated kiln is a latch (i.e., closure device

60) and a hinge (i.e., pin/receptacle 30, 38). See col. 4, lines 17-21. To further insulate the control components from the kiln, Skutt also discloses an insulated baffle 68, which includes a metal plate 70 and fiber insulation. The insulated baffle is positioned within the control box 36, between the front side 58 of the control box 36 (where the electronics are housed) and the kiln. See Fig. 4. As a result, the insulated baffle insulates cool air surrounding the control components from warm air that surrounds the kiln. To increase the cooling effect of air within the control box, Skutt discloses air vents (i.e., openings) 102, 108 formed in the top and bottom of the control box 36 through the use of louvers 100, 106. See Fig. 4. By angling the bottom louvers (i.e., 106) away from the kiln, cool air (indicated at arrows 110, 82, and 104) is allowed to circulate up an insulated chamber 80 formed within the control box. See col. 4, lines 35-39 and col. 5, lines 20-33. The cool air cools the control components. Thus, Skutt only discloses insulating electric components from a kiln by minimizing the physical contact between the components and the kiln and by providing an insulated baffle between the components and the kiln. Skutt also discloses providing louvers to control the direction of air flow.

Wilens is directed to a springy metal retainer 10 (in the shape of a "W") for holding and dissipating heat from a flat, rectangular solid state package of electronic components 25 (e.g., transistors, capacitors, or resistors). See col. 1, lines 8-11 and col. 2, lines 53-60. The middle of the "W" shaped retainer forms an inverted U-shaped channel 12 that holds and dissipates heat from the package of electronic components. The U-shaped channel includes a springy bight 16 so that the U-shaped channel can conform to the shape of the package and frictionally engage the sides of the solid state package 25, when the package is inserted into the channel. The direct physical contact and conforming fit between the package 25 and the U-shaped channel allows the retainer to dissipate heat emitted from the package. The U-shaped channel 12 is connected to bottom walls 20a, 20b that are integral with outer side walls 22a, 22b, and a plurality of tabs 24 extend outwardly from both side walls 22a, 22b to define openings

or louvers 26. Thus, Wilens discloses a "W" shaped heat emitting retainer that is specifically configured to dissipate heat from a flat, rectangular solid state package by way of a U-shaped channel that conforms to the shape of the package; and, Wilens also discloses tabs that are designed to allow unimpeded air flow.

Although the Examiner concluded that it would be obvious to combine Skutt and Wilens, the Applicant disagrees, as provided in Applicant's response of September 18, 2002. To sustain a rejection that an invention is "obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior art that would lead a person of ordinary skill in the art to select the references and combine them in a way that would produce the claimed invention." See Karsten Mfg. Corp. Cleveland Golf Co., 242 F.3d 1376, 1385 (Fed. Cir. 2000). The suggestion must be explicit or implicit, or there must be a suggestion in the knowledge generally available to one of ordinary skill in the art. MPEP § 2143.01. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." Id.

There is not an explicit or implicit teaching within Skutt and Wilens to combine the two references, and the nature of the problems to be solved by Skutt and Wilens are different. In particular, as provided above, the nature of the problem to be solved in Skutt is to insulate control component(s) from a kiln, i.e., a heat emitting device. Skutt discloses minimizing physical contact between the control components and the kiln to address the problem. The nature of the problem to be solved in Wilens, on the other hand, is to dissipate heat from a package that emits heat. Wilens addresses this problem by maximizing physical contact between a springy, metal retainer and an electronic package that emits heat. As a result, there is no motivation to combine the two references because they are directed to solving different problems. In fact, the two references actually teach away from one another. Skutt, by providing for insulation and minimal physical contact between electrical components and a kiln, teaches away from

Wilens, which provides for maximum physical contact between a metal, springy retainer and a rectangular solid state package, and fails to disclose any insulation characteristics. Therefore, the two references teach away from one another, and the Applicant submits that there is no motivation to combine the Skutt and Wilens references. The Examiner has not identified any such motivation, and thus fails to establish a *prima facie* case for obviousness.

Indeed, even if there was a motivation to combine Skutt and Wilens, the combination would not disclose a “planar surface” that comprises both “a plurality of louvers” and “a depression,” on the same planar surface, as is defined in Claims 1, 4, and 9. The combination would merely result in a “W” shaped retainer comprised of the inverted U-shaped channel connected to bottom walls that are integral with outer side walls. The louvers of Skutt would be formed on the outer side walls of the “W” shaped retainer. If the U-shaped channel of Wilens were construed as “a depression,” the “depression” would be connected to bottom walls. And, the louvers of Skutt would be formed on the outer side walls of the “W” shaped retainer—not on the bottom walls that are connected to the U-shaped channel. Thus, the combination would not disclose a “depression” on the same “planar surface” as “a plurality of louvers,” as is defined in Claims 1, 4, and 9.

Consequently, in contrast to the present invention, the combination of Skutt and Wilens would not be able to both physically cover an open end of the hard drive in order to prevent user contact with hot electrical components within the hard drive and dissipate heat from the hard drive. The present invention both protects a user from contact with electrical components within the hard drive and dissipates heat from the hard drive by way of “a planar surface” that is comprised of both a “plurality of louvers” and “a depression located to contact said motor when said plate is attached to said hard drive,” as is defined in Claims 1, 4, and 9. Thus, neither Skutt, Wilens, nor a combination of the two anticipates or renders obvious the present invention, as is defined in Claims 1, 4, and 9.

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As a result, the Applicant submits that Claims 1, 4, and 9 are allowable over the cited art. Applicant also submits that Claim 3, which depends from allowable base Claim 1, Claims 6-8, which depend from allowable base Claim 4, and Claims 10-14, 16, and 23, which depend from allowable base Claim 9, are allowable over the cited art.

In view of the foregoing, the Applicant respectfully submits that Claims 1, 3, 4, 6-14, and 16-24 are in condition for allowance. Reconsideration and withdrawal of the rejections is respectfully requested, and a timely Notice of Allowability is solicited. To the extent it would be helpful to placing this application in condition for allowance, the Applicant encourages the Examiner to contact the undersigned counsel and conduct a telephonic interview.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with markings to show changes made." While the Applicant believes that no fees are due in connection with the filing of this paper, the Commissioner is authorized to charge any shortage in the fees, including extension of time fees, to Deposit Account No. 50-0639.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 2, 5, and 15 have been canceled.

Claims 1, 4, and 9 have been amended as follows:

1. (Once Amended) A shield for use with a hard disk drive [having a rectangular shape when viewed in plan], said hard disk drive having a heat emitting motor and heat emitting components, comprising:

a [rectangular] plate [having a rectangular shape when viewed in plan and] having two sides spaced no farther apart than the overall width of said hard drive, said two sides defining a substantially planar surface, the substantially planar surface comprising a depression located to contact said motor when said plate is attached to said hard disk drive,

said substantially planar surface of said plate being formed with a plurality of louvers to dissipate heat to the atmosphere, each said louver comprising a fixed [rectangular] fin within said [rectangular shape] substantially planar surface slanting upwardly from said plate, each said fin having three edges comprising a longitudinal edge having ends spaced inward from said sides and two side edges at said ends perpendicular to said longitudinal edge, said fin having a fourth edge integral with said plate and spaced from and parallel to said longitudinal edge, said fourth edge [side] interconnecting said side edges, each said fin being connected to said plate and located between said sides.

4. (Once Amended) A shield for use with a hard disk drive, said hard disk drive having a heat emitting motor, comprising:

a plate having two spaced apart sides defining a substantially planar thermal conductive region therebetween, the substantially planar thermal conductive region further comprising a depression located to contact said motor when said plate is attached to said hard disk drive;

said substantially planar thermal conductive region [plate] comprising a plurality of louvers adapted to dissipate heat from said plate, each said louver comprising a fin connected to said substantially planar thermal conductive region slanting upwardly from said plate, each said fin having three primary edges comprising a longitudinal edge having ends spaced inward from said sides and two side edges at said ends substantially perpendicular to said longitudinal edge, said fin having a fourth edge integral with said plate and spaced apart from and substantially parallel to said longitudinal edge, said fourth edge [side] interconnecting said side edges, each said fin being connected to said plate and located between said sides.

9. (Twice Amended) A shield for use with a hard disk drive having a heat emitting motor, comprising:

a plate comprising a substantially planar surface disposed in a first plane, said substantially planar surface comprising a depression formed therein and located to contact said motor when said plate is attached to said hard disk drive; and,

a plurality of louvers provided in said substantially planar surface of said plate and adapted to dissipate heat from said plate, each of said plurality of louvers comprising a substantially planar surface disposed in a respective second plane that intersects said first plane at a corresponding angle, each of said plurality of louvers further comprising a plurality of side edges including an integral side edge connected to said plate.